Practicing with Target Types

Learning Target for the Activity:

Know how to classify learning targets according to type.

Premise:

In order to select an appropriate assessment method, we need to be able to classify learning targets by type.

Source note: The reading passages have been taken from Chappuis, J. & Stiggins, R.J. (2016, in press). *An Introduction to Student-Involved Classroom Assessment*, 7e. Upper Saddle River, NJ: Pearson Education. Permission granted to Blue Valley School District to reproduce for this activity.

PART 1: CATEGORIES OF LEARNING TARGETS

Directions:

- Begin by reading the section "Categories of Learning Targets."
- Work with a partner to complete the self-check activity "Practice with Identifying Target Types."
- Discuss with the group your choices and your reasons.
- Mark those that differ from the answer key. Write the correct letter next to those you missed.

1. Categories of Learning Targets

When content standards have been formatted to function as a curriculum, they take the form of unit- or lesson-level learning targets. These targets represent different kinds of learning. Some call for learning at the knowledge level, some call for the use of knowledge to reason or solve problems, some call for the performance of a physical skill, and some call for the creation of a product that meets standards of quality. In addition we have aspirational goals for students, which can be thought of as dispositions. These five categories of learning target types were first proposed by Stiggins and Conklin (1992) after an extensive study of the various kinds of learning expectations reflected in classroom instruction and assessments:

- Knowledge-level learning targets represent factual subject matter content, procedural knowledge of how to execute a series of steps, and conceptual understanding where the intent is to be able to explain a concept.
- Reasoning-level learning targets define thought processes students are to learn to execute—the ability to use knowledge and conceptual understanding to figure things out and to solve problems, as in scientific inquiry, math problem solving, and comprehension of subject matter text.
- Performance skill-level targets require the development of behavioral or physical skills, such as playing a musical instrument, reading aloud fluently, conversing in a second language, or using psychomotor skills.
- Product-level targets call for the creation of tangible products, such as research papers, models of geometric figures, and works of art.
- Disposition-level targets specify the development of the attitudes, interests, and motivational intentions that support learning success.

Clear learning targets guide instruction, assignments, and assessment. As you will see, these categories become useful in thinking about classroom assessment because they encompass all learning targets and relate to one another in understandable ways. Classifying targets according to type prior to instruction offers three significant benefits:

1. Help with knowing how to structure the lesson
2. Help with deconstructing (or "unpacking") a content standard to determine which activities and assignments will lead most effectively to mastery of the target
3. Guidance in selecting the assessment methods that will yield the most accurate achievement data

Classifying learning targets takes some practice, but with time it will become a primary filter to determine both your approach to instruction and the assessment method you will use.

Practice with identifying Target Types

Decide what category each learning target belongs to. Use the following key: K=knowledge, R=reasoning, PS=performance skill, P=product, and D=disposition.

Target	K	R	PS	P	D
1. Compare or contrast two or more characters in a story.					
2. Use laboratory equipment safely.					
3. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.					
4. Demonstrate fluid reading at an understandable pace.					
5. Desire to explore topics further outside of class.					
6. Create tables, graphs, scatter plots, and box plots to display data effectively.					
7. Describe barriers to physical activities and strategies to overcome them.					
8. Evaluate quality of own work to refine it.					
9. Explain the powers and limits of the three branches of government.					
10. Recognize area as an attribute of plane figures and understand concepts of area measurement.					
11. Maintain balance while walking on a line or a balance beam.					
12. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.					
13. Understand that plants depend on water and light to grow.					
14. Create a map of new world regions based on cultural and environmental factors.					

End Part 1

PART 2: KNOWLEDGE-LEVEL TARGETS

Directions:

- Read the section "Knowledge-Level Targets."
- Review the activity "Practice with Identifying Target Types." Focus on those that are knowledge targets and those you labelled as knowledge targets.
- Discuss with a partner any insights into what a knowledge level target is and isn't, according to this scheme of classification.

2. Knowledge-Level Targets

Mastery of prerequisite knowledge is essential to success with other levels of achievement; part of our jobs as teachers is to be sure our students learn important content that underpins successful performance in our subject area. Knowledge-level targets fall into one of three sub-categories: factual information, procedural knowledge, and conceptual understanding.

Factual Information

When we were in school, we were asked to learn certain facts and information "by heart:" what happened in 1066, the authors of the Declaration of Independence, the Presidents of the United States, what the symbol "Au" refers to on the periodic table of elements, vocabulary words, multiplication facts. These are "recall" statements and they are a part of the *Knowledge* category, that is, they specify memorization of factual information. These types of knowledge targets range from the simple, e.g., "Know the formula for area of a circle" to the complex, e.g., "Acquire and use accurate grade-appropriate general academic and domain-specific words and phrases" (ELA CCSS p. 53)

Beyond knowing information outright, another way of knowing is via reference—to know where to find the information. What, of all of the information students need, will we ask them to memorize, and what will teach them to find? Will they need to memorize the entire list of prepositions (*above, aboard, about*…), the complete table of periodic elements, or the capitals of the 50 U.S. states? Perhaps, and perhaps not. In preparation for teaching knowledge-level targets, it will be important to understand which students will need to know outright and which it makes more sense to consult a reference to retrieve.

Procedural Knowledge

Some knowledge-level learning targets call for procedural knowledge: knowing how to execute a protocol or carry out a series of steps. For example, "Apply the distributive property to the expression 3(2 + x) to product the equivalent expression 6 + 3x" (Mathematics CCSS, p. 44). Procedural knowledge involves memorization of the protocol--how to execute each step and the order in which the steps are to be carried out.

Conceptual Understanding

The world around us is full of things we know but don't understand. For instance, we may be able to identify a bridge as a suspension bridge, but we may not know how its structure supports weight sufficiently to keep it from falling into the water. When we can explain how a suspension bridge remains intact despite a heavy load, we have knowledge at the conceptual understanding level. Similarly, when we can define the word *watershed* and explain what not to do in a watershed environment and why, we are demonstrating conceptual understanding. If the learning target calls for conceptual understanding, students must learn more than a definition: surely the learning target "Understand that a function is a rule that assigns to each input exactly one output" (Mathematics CCSS p. 55) is not mastered by reciting "A function is a rule that assigns to each input exactly one output." A conceptual understanding target at the knowledge level means that students can explain the concept. We would not call this "low level" knowledge; conceptual understanding is essential for reasoning effectively in any discipline.

Relationship to Other Targets

Content knowledge forms the foundation of all other forms of academic competence. We cannot speak a foreign language unless we know the vocabulary—vocabulary knowledge isn't sufficient, but it is essential. We cannot solve science problems unless we bring science knowledge to the table, or find algebra solutions without conceptual understanding in that domain. We suggest that it is time to retire the term "higher-order thinking" because it implies that "lower-order thinking," traditionally defined as mastery of content knowledge, is not important. When we overlook the importance of content mastery (knowledge and conceptual understanding), we deny our students access to the platform they need to engage in meaningful use of that knowledge. Without a foundation of relevant knowledge in any context, problem solutions remain beyond reach. For this reason, you will find no further reference to higher- or lower-order thinking in this book. Rather, we will honor the acquisition of useful knowledge and the ability to use it to reason, solve problems, perform skillfully, and create high-quality products all as valuable components of a rigorous education.

For Example: Knowledge-Level Targets

Subject	Learning Target
English Language Arts	• Use an apostrophe to form contractions and frequently occurring possessives. • Explain the function of verbals (gerunds, participles, infinitives) in general and their function in particular sentences.
Mathematics	• Recognize area as an attribute of plane figures and understand concepts of area measurement. • Understand that statistics can be used to gain information by examining a sample of the population.
Science	• Understand that plants depend on water and light to grow. • Define a variety of cell structures.
Social Studies	• Explain what governments are and some of their functions. • Explain the powers and limits of the three branches of government.
Health/Physical Education	• Describe how each food group contributes to a healthy body. • Describe barriers to physical activities and strategies to overcome them.
The Arts	• Identify and write notes on a treble clef. • Identify and describe elements of design in a work of art.

End Part 2

PART 3: REASONING-LEVEL TARGETS

Directions:

- Read the section "Reasoning-Level Targets."
- Review the activity "Practice with Identifying Target Types." Focus on those that are reasoning targets and those you labelled as reasoning targets.
- Discuss with a partner any insights into what a reasoning target is and isn't, according to this scheme of classification.

3. Reasoning-Level Targets

Reasoning-level learning targets specify thought processes students are to learn to apply effectively within a range of subjects; e.g., solve problems, make inferences, draw conclusions, form and justify judgments. Mastering content knowledge is not the sole aim of education today. Students must also develop the ability to apply knowledge in authentic contexts—those contexts that transfer to the workplace and to life beyond school.

Each subject-area curriculum includes reasoning processes such as *predict, infer, hypothesize, estimate*, *classify, compare, summarize, draw conclusions, analyze, evaluate,* and *justify*. The collection of reasoning processes found in the various academic disciplines can be classified into one of six overall patterns: inference, analysis, comparison, classification, evaluation, and synthesis. These six patterns encompass those reasoning proficiencies most commonly found in various taxonomies and content standards as well as in the application of academic disciplines in life beyond school.

Inference

An *inference* is a reasonable guess or conclusion based on information. Inferences can take one of two forms: *inductive* or *deductive*. When we make an inductive inference, we use evidence or facts to infer a general rule or principle. Sound inductive reasoning requires that we select relevant evidence or facts, interpret them accurately, and then draw careful conclusions based on them. Examples of inductive inference include the following:

- Identifying main idea
- Predicting
- Making analogies
- Generalizing
- Hypothesizing

A deductive inference also involves drawing a conclusion based on information. We can engage in deductive reasoning in two ways. The first is to begin with a general rule or principle and then infer a specific conclusion or solution. To do this well, we apply the general rule to a specific case and draw a plausible conclusion about that specific case.

General rule: *All people get mad sometimes.*
Specific case: *Mom (a person)*
Conclusion: *Mom gets mad sometimes.*

A second way to make a deductive inference is to begin with a set of premises that we know to be true and then infer a specific conclusion or solution.

Premise 1: *Boston is east of Chicago.*
Premise 2: *Chicago is east of Salt Lake City.*

Conclusion: *Boston is east of Salt Lake City.*

Analysis

When we *reason analytically*, we examine the components or structure of something. We undertake analysis to understand something more deeply, to see how it works, to provide an interpretation of it, or to evaluate it. Analysis often requires that we investigate how the components relate to each other or how they come together to form a whole. For students to be successful, they must be able to identify the parts of something and then have practice at describing the relationships among the parts or between the parts and the whole. Examples of analytical thinking include the following:

- Analyzing a controversial decision, identifying arguments for and against a particular action
- Conducting an experiment to analyze a compound to determine its component chemicals
- Determining the meaning of unknown words by breaking them into prefixes, suffixes, and root words

Comparison

Describing similarities and differences between two or more items it at the heart of *comparative reasoning*. In this definition, comparative reasoning encompasses both *compare*—to find similarities, and *contrast*—to find differences. Venn diagrams and T-charts are two common graphic organizers used to help students understand the structure of comparative reasoning.

In the simplest form of comparison, students say how two things are alike or different. In its more complex form, students first select appropriate items to compare, then select salient features to base their comparison on, and last, perform the actual comparison (Marzano, Pickering, & McTighe, 1993).

The act of contrasting can also take the form of *juxtaposition*, whereby we place two significantly different things such as objects, emotions, thoughts, melodies, colors, textures, arguments, or people, side by side to define each in sharp relief or to cause the differences between them to stand out distinctly. *Contrast*, used in this sense, is a device we manipulate for effect in areas such as writing, music, art, and drama.

Classification

Classification can be thought of as sorting things into categories based on certain characteristics. In its simpler form, classification consists of sorting objects into predetermined, carefully defined categories. To sort well at this basic level, students need practice at identifying and observing the pertinent characteristics that will help them determine which category the object belongs in.

A more complex classification exercise requires students to select or create the categories and then do the sorting. The game "Twenty Questions" is an exercise in creating categories. The first question might be, "Is it an animal?" to classify the object by general type. The next question could be, "Is it bigger than a bread box?" to classify the object according to size. The third question might be, "Does it live around here?" to narrow possibilities according to habitat. The trick in Twenty Questions, as in all classification challenges, is to identify relevant categories.

Evaluation

Evaluative reasoning involves expressing and justifying an opinion, a point of view, a judgment, or a decision. It can be thought of as having three facets—an assertion, the criteria the assertion is based on, and evidence that supports the assertion. Students are generally able to make an assertion or judgment, but often do not follow up with the criteria on which the judgment was based, or with the evidence they used. Instead, they express an opinion and do not follow up with a credible justification. This can't be considered sound evaluative thinking until students are able to identify the criteria for making their assertion or judgment and are able to provide evidence that aligns with the criteria.

Content-specific examples of "assertion, criteria, and evidence" include the following:

- In mathematics problem solving, students select a strategy by first examining the options and judging the usefulness of each in the context of the problem, and second evaluate how well the strategy they selected is working as they use it.
- In science, students evaluate the validity of their conclusions based on what they know about experimental design.
- In social studies, students evaluate the quality of the arguments a politician makes against a set of criteria for accuracy and relevance.
- In English, students assess the credibility and accuracy of information gathered from multiple sources.

Synthesis

Synthesis is the process of combining discrete elements to create something new. Cookies are an example of synthesis because the end product is something more than a collection of parts. When we combine eggs, milk, sugar, flour, salt, and vanilla we get something new—cookie dough—which some people bake before eating. Creating a tower out of blocks would not qualify as synthesis under this definition. Synthesizing involves selecting relevant ingredients to combine and then assembling them in such a way as to create a new whole.

Writing a report is an act of synthesis; we want students to create something new (e.g., in their own words or with their own thoughts) from separate ingredients. To do this they must locate and understand various chunks of relevant information, sort through them, think about how they fit together, and then assemble and present them in a way that does not simply copy the original sources. Although the assembly process differs according to the context, what all synthesis activities have in common is that they result in something more than the original ingredients.

Relationships Among Patterns of Reasoning

In line with current thought, we have not indicated a hierarchy of difficulty or importance among these reasoning categories. However, some patterns of reasoning depend on others to be carried out effectively. For example, before evaluating an issue, you might need to analyze it to identify the main problem, describe the different points of view on the issue, discover the assumptions that underlie various positions, and determine the information needed to inform a position on the issue; you might also need to compare positions to identify the most salient features of disagreement and agreement.

Also, the patterns are not completely separate from each other. For example, classifying and comparing are presented by some authors (e.g., Klauer & Phye, 2008) as types of inductive or deductive inferences because they involve either looking at the objects to be compared to detect commonalities (induction) or using the categories to identify examples (deduction). We present the six categories of inference, comparison, classification, evaluation, and synthesis as separate patterns here because they are commonly referred to separately in content standards documents and they can be taught and assessed separately as well as in combination.

For Example: Reasoning-Level Learning Targets

Subject	Learning Target
English Language Arts	• Identify basic similarities in and differences between two texts on the same topic. • Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient.
Mathematics	• Compare two two-digit numbers based on meanings of the ten and ones digits. • Prove theorems about triangles.
Science	• Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performed. • Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
Social Studies	• Evaluate a source by distinguishing between fact and opinion. • Evaluate the credibility of a source by examining how experts value the source.
Health/Physical Education	• Analyze a food journal for missing nutrients. • Compare and contrast personal progress in relationship to national physical fitness standards.
The Arts	• Compare purposes of chosen musical examples. • Evaluate quality of own work to refine it.

End Part 3

PART 4: PERFORMANCE SKILL TARGETS

Directions:

- Read the section "Performance Skill Targets."
- Review the activity "Practice with Identifying Target Types." Focus on those that are performance skill targets and those you labelled as performance skill targets.
- Discuss with a partner any insights into what a performance skill target is and isn't, according to this scheme of classification.

Performance Skill Targets

Performance skill targets are those having a real-time demonstration or physical performance at the heart of the content standard. By this definition, the performance skill category is a narrow one. Subject areas such as fine arts, music, physical education, performing arts, and world languages have many performance skill targets in their curricula. Other subjects may have few or none. Examples of performance skill targets include "Read aloud with fluency," "Make observations and/or measurements to produce data," "Dribble the ball to keep it away from an opponent," and "Converse in the target language in a host family scenario."

Relationship to Other Targets

To perform skillfully, students must possess fundamental knowledge combined with reasoning proficiency. For example, to perform CPR effectively, students must have knowledge of the steps to take and the ability to analyze a situation to determine what steps to take. However, you don't want the people staffing an aide car to possess only those sets of competencies. You also want them to have the skill required to execute the steps effectively.

As with the CPR example, performance skill targets represent an end in and of themselves. But they also often function as a building block for product-development capabilities. For example, students cannot produce a quality piece of writing (a product target) unless they have the physical skills to get their thoughts from their head onto paper—handwriting, keyboarding, or dictation proficiency (performance skills.)

In this category of learning targets, the student's learning objective is to integrate knowledge and reasoning proficiencies with skillful performance. This is precisely why performance skill targets often require more sophisticated assessments. Success in mastering product-level learning targets—the next kind of target—often (but not always) has as a prerequisite the ability to perform some kind of skill.

For Example: Performance Skill Targets

Subject	Learning Target
English Language Arts	• Create engaging audio recordings of stories or poems that demonstrate fluid reading at an understandable pace. • Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.
Mathematics	• Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. • Measure angles in whole-number degrees using a protractor.
Science	• Measure properties of objects using balances and thermometers. • Use laboratory equipment safely.
Social Studies	• Use appropriate protocols to greet people from other countries. • Participate in civic discussions.
Health/Physical Education	• Maintain balance while walking on a line or a balance beam. • Demonstrates trapping, dribbling, and passing to a partner in a modified soccer game.
The Arts	• Perform songs using appropriate expression to reflect music. • Integrate voice into character development.

End Part 4

PART 5: PRODUCT-LEVEL TARGETS

Directions:

- Read the section "Product-Level Targets."
- Review the activity "Practice with Identifying Target Types." Focus on those that are products targets and those you labelled as product targets.
- Discuss with a partner any insights into what a product target is and isn't, according to this scheme of classification.

Product-Level Targets

Product-level targets are just that: the content standard itself specifies the creation of a product. Product targets range from the simple to the complex. Examples include the following:

- Create tables, graphs, scatter plots, and box plots to display data effectively (mathematics)
- Create a personal wellness plan (health)
- Create a scripted scene based on improvised work (theater arts)
- Develop a model to describe a phenomenon (science)
- Produce clear and coherent writing (English language arts)

In all cases, student success lies in creating products that possess certain key attributes when completed. Instruction focuses on the attributes the product must have to be judged of high quality. The instruction and assessment challenge is to be able to define clearly and understandably communicate what those attributes are.

Relationship to Other Targets

Once again, successful product creation arises from mastery of prerequisite knowledge and application of prerequisite reasoning and skill strategies. In addition, students may need to perform certain predefined steps to create the desired product. Prerequisite achievement underpins the creation of quality products, but evidence of ultimate success resides in the product itself: to what extent does it meet standards of quality for the given product?

For Example: Product-Level Targets

Subject	Learning Target
English Language Arts	• Write informative/explanatory texts in which they name a topic, supply some facts about it, and provide some sense of closure. • Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
Mathematics	• Draw a picture graph and a bar graph to represent a data set with up to four categories. • Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified.
Science	• Report observations of simple investigations using drawings and simple sentences. • Create a simplified model of a complex system.
Social Studies	• Create a timeline to show personal events in a sequential manner. • Create a map of new world regions based on cultural and environmental factors.
Health/Physical Education	• Develop a home fire escape plan. • Develop a personal health-related fitness plan.
The Arts	• Create drawings demonstrating one- and two-point perspectives. • Create a scripted scene based no improvised work.

End Part 5

PART 6: DISPOSITION TARGETS

Directions:

- Read the section "Disposition Targets—The Affective Domain."
- Review the activity "Practice with Identifying Target Types." Focus on those that are disposition targets and those you labelled as disposition targets.
- Discuss with a partner any insights into what a disposition target is and isn't, according to this scheme of classification.

Disposition Targets—The Affective Domain

This final category of targets that we have for our students includes those characteristics that go beyond academic achievement into the areas of affective and personal feeling states, such as attitudes, sense of academic self-confidence, interest, and motivation. For example, many teachers have a goal that students will develop positive academic self-concepts or positive attitudes toward school subjects ("I like math"), predisposing them to enjoy learning. Without question, we want our students to develop strong interests, as well as a strong sense of internal control over their own academic well-being.

We can define each disposition in terms of three elements: focus, direction, and intensity. Each disposition has a focus—our attitudes, interests, and motivation focus on certain things. Dispositions can be positive or negative in direction and vary in intensity from strong to weak feelings. When we assess a disposition, for example *attitude toward writing*, we are interested in information about both the direction and level of intensity of the attitude. We might offer a series of statements such as "I like writing," "I am good at writing," and "I like to write in my spare time," which students would rate on a continuum of "strongly agree," "somewhat agree," neither agree or disagree," "somewhat disagree," and "strongly disagree." In this example, we have the focus—attitude toward writing, the direction—positive or negative, and the intensity—strong, somewhat, or neutral.

Relationship to Other Targets

Dispositions very often result from success or lack of success in academic performance. In that sense, they accompany each learning target a student engages with. Students bring dispositions to the table preceding the first attempt, change them during the course of practice (or not), and perhaps change them again (or not) at the conclusion of instruction. Students also bring dispositions to the assessment experience; they are in play both during and after the event. We can to structure both instruction and assessment so that they contribute to the development of productive dispositions in students.

For Example: Disposition Targets

Subject	Learning Target
English Language Arts	• Enjoy writing. • See self as capable of succeeding at reading with sufficient effort.
Mathematics	• See mathematics as important to learn. • Look forward to math class.
Science	• Curious about how things work. • Want to conduct experiments at home.
Social Studies	• Inclined to probe the validity of own and others' positions on issues. • Desire to explore topics further outside of class.
Health/Physical Education	• Seek out opportunities to engage in physical activities. • Choose to avoid drug and alcohol use.
The Arts	• Value practice as necessary to improvement and enjoyable in its own right. • Want to participate in community theater.

End Part 6

PART 7: CLASSIFYING YOUR OWN LEARNING TARGETS BY TYPE

Directions:

- Read the section "Classifying Targets by Type."
- Using your own curriculum document, see if you can find examples of each of the four "academic" categories (K, R, PS, & P). Remember, not all subjects include all four types of targets. In addition, create two disposition targets you hold for students. (If your content standards include disposition targets, use them.)
- Share your results with a partner.

Classifying Targets by Type

When classifying a learning target by type, it is important to read the whole learning target rather than simply relying on the verb in the learning statement. Most often, the verb will signify the type, but there are times when the verb will mislead you. For example, if the target begins with "explain" and then is followed by a statement of something beyond the knowledge level, then it most likely is not a knowledge-level target. The chart below gives some examples of verbs typically associated with the different types of targets.

Target Type	Key Words
Knowledge/ Understanding	Explain, understand, describe, identify, tell, name, list identify, define, label, match, choose, recall, recognize, select
Reasoning	*Inference*: Determine main idea, draw conclusions, generalize, hypothesize, interpret, predict, state implications *Analysis*: Examine parts or components, determine ingredients, dissect, identify logical sequence, order, take apart *Comparison*: Distinguish between, identify similarities and differences, juxtapose *Classification*: Categorize, determine, give examples, group, sort *Evaluation*: Appraise, assess, critique, debate, defend, dispute, evaluate, judge, justify, prove, support opinion, *Synthesis*: Adapt, blend, combine into, create, formulate, modify
Performance Skill	Observe, focus attention, listen, perform, do, question, conduct, work, read, speak, assemble, operate, use, demonstrate, measure, investigate, model, collect, dramatize, explore
Product	Design, produce, create, develop, make, write, draw, represent, display, model, construct

Identifying Knowledge Targets
Learning targets requiring recall of information often begin with verbs such as *know*, *explain, list*, *name*, *identify*, and *recall*. However, consider these two examples: "Know how healthy practices enhance the ability to dance" and "Know folk dances from various cultures" (Kendall & Marzano, 1997, p. 387 and p. 386). While the intent of the first may be knowledge of the connection between healthy practices and success at dance, the second may include the expectation that students can perform a variety of folk dances. In this case, it is really a performance skill target, even though it begins with the word "knows."

Targets specifying procedural knowledge usually refer to an algorithm or other process involving a set of steps. Sometimes a target may look like procedural knowledge, but in fact is a reasoning target. For example, the target "Know how to broaden or narrow inquiry when appropriate" begins with the phrase "know how to," which may be a clue to procedural knowledge, but which in this case is not. Rather, determining whether a target is too narrow or too broad requires reasoning, and if the target's intent is that students be able to broaden or narrow a topic, that is also reasoning.

When conceptual understanding is called for, the target usually includes the verb *understand.* However, the verb *understand* can also signify a reasoning target. Is the intent that students explain something, such as the differences between a food chain and a food web? If so, it's a knowledge target at the conceptual understanding level. (Remember, labeling a target as knowledge doesn't make it a simple target—in order to explain a concept clearly, you have to know it well.) Or is the word *understand* accompanied by amplification that includes a reasoning proficiency? In this case it is a reasoning target.

Identifying Reasoning Targets
While reasoning targets can most often be identified by the verbs they contain, some reasoning targets do not include a reasoning verb. For example, the learning target "Draw examples of quadrilaterals that do and do not belong to any of the subcategories" may look like a product target because it begins with the word *draw*. The intent of this target, however, is to have students draw quadrilaterals in order to classify them. You might even consider this a knowledge target if you interpreted it to be a test of their understanding of types of quadrilaterals. Another example is "Given a set of data or a word problem, create an equation or inequality to solve the problem." The verb *create* may lead you to think of this as a product target, but the focus is students' ability to solve problems using equations and inequalities, a reasoning target.

When the verb *understand* signifies a reasoning target, then it calls for something more than conceptual understanding and it will be accompanied by information about what level understanding will be demonstrated. The information will (or should) include one or more patterns of reasoning and teaching to this target will include instruction on how to carry out the pattern or patterns of reasoning specified.

Sometimes a reasoning target in the curriculum guide becomes a knowledge target in practice. For example "Compare and contrast main characters in a novel" is a reasoning target as written, However, if the teacher compares and contrasts the main characters in the novel and then test students' ability to replicate her reasoning with the same characters, it is not the students' ability to compare and contrast that is being tested; it is their recall of what the teacher shared. It may have started out as a reasoning target but it was tested as a knowledge target. To assess a reasoning proficiency, we must provide students with a novel (new) application of the pattern of reasoning they have been practicing with. The key to making the determination here lies in asking, "Who is doing the reasoning?" Are students doing more than remembering the answers the teacher previously provided?

Identifying Performance Skill Targets
The performance skills category can be confusing. You will hear phrases such as "problem-solving skills," "reading skills," and "thinking skills." While there is nothing inherently wrong about calling these cognitive exercises *skills*, the ultimate goal of those listed is some form of thinking. If you were to take them apart you would find a combination of knowledge and reasoning. The term *performance skill targets* identifies a small set of content standards that have an *outwardly visible or audible performance* at the heart of the intended learning. The differentiation between cognitive "skills" and performance skills becomes an important distinction in both teaching and assessing the learning, which we will address more fully in Chapter 4.

Additionally, when the target in question is a measurement skill, the line between procedural knowledge and performance skill becomes blurry. Measurement skills requiring manual dexterity and fine motor control, such as those often encountered in mathematics and science, are largely procedural knowledge—knowing how to use the tool correctly, as in the case of measuring an angle with a protractor. But because they also require the physical act of carrying out the measuring protocol, we classify them as performance skill targets.

Identifying Product Targets
Classifying a target as a product target can be challenging, too. We are quite used to asking students to create products to demonstrate learning, but the content standard to be assessed may not have any relation to the product development capabilities required by the assignment. For example, when a student makes a diorama (a three-dimensional scene inside a shoebox turned on its side) as a reading assignment, what is the intended learning target? Perhaps it has to do with identifying literary elements. If so, the diorama should be assessed for the extent to which the student demonstrated understanding of the literary elements specified, rather than characteristics of the diorama itself; even though the student has created a product, the learning targets to be assessed do not have to do with the ability to create a scene that creates meaning. If the content standard is truly a product target, the statement will call for the product.

In English language arts, the content standards calling for the creation of different types of writing are considered by definition to be product targets. In other instances where students are asked to produce writing, the content standard may not require a written product, in which case it is not a product target. When we confuse the activity with the target, we cause problems for ourselves and our students in instruction and in assessment. The ability to distinguish between the task—the activity the students will engage in—and the learning target—what they are to master by doing the assignment—is crucial to classifying targets and to creating an accurate assessment. The key question in classifying targets is "What is the intended learning?" not "How will students demonstrate the learning?" The choice of demonstration comes after the classification itself and we discuss that choice in depth when we delve into selecting the appropriate assessment method. (*Blue Valley SD note: this will happen during the summer workshop*).

Identifying Disposition Targets
Dispositions are not often found in the written curriculum. "I look forward to coming to school each day" is a disposition we hope student develop as a result of being in our classes, but it doesn't show up in the list of content we are to teach. An exception comes from the Common Core State Standards for Mathematics, which includes productive disposition in the Standards for Mathematics, defined as "habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy" (Mathematics CCSS, 201c, p.6).

Dispositions can more often be found in overarching goals of school and in mission statements. We typically do not hold students accountable for achieving certain dispositions in the same way that we hold them accountable for mastering the other types of learning targets, but that doesn't mean they are not important or that we would never inquire about them. Understanding students' dispositions can give us insights that help us work more effectively with students as individuals and in groups. If, for example, we found that a majority of students

in our class clearly indicated a dislike for reading, that information might cause us to review how we are teaching reading.

My Examples

Knowledge	
Knowledge	
Reasoning	
Reasoning	
Performance Skill	
Performance Skill	
Product	
Product	
Disposition	
Disposition	